IN THE CLAIMS

1. (currently amended) ~~A method for processing and analyzing digital terrain data, comprising~~A method for producing a pre-calculated compact size Digital Terrain Model (DTMO), for inquiring in real time whether one or more source points of interest within a selective area of the terrain is exposed to a ground or air vehicle, comprising:

a) providing Digital Terrain Elevation Data (DTED);

b) defining one or more selective source points of interest within an area of the DTED~~defining an approach azimuth and a visibility limitations angle~~;

c) for each selective source point within the DTED, defining a directional fan, said definition comprises~~s by determining~~ a fan opening angle, a fan azimuth, and a maximal range for terrain analysis;

d) for each of said selective source points, constructing ~~at least one~~ a directional fan data set~~, from at least one~~having origin at the source point ~~within the DTED~~, ~~that~~ and which contains the lines of sight information between said source point and plurality of DTED points located within the ~~said directional fan~~terrain~~;~~; ~~and~~

wherein the directional fan(s) are constructed from one or more data set(s) of exposable heights, by performing the following steps:

a) evenly dividing the fan area into angular directions according to a fan angular resolution;

b) constructing a data set of exposable heights for each angular direction, by computing for each point within the angular direction the distance and elevation angle of said point relative to the fan source point;

c) determining for each point within a data set of exposable heights if said point is in line of sight with the fan source point, said determination defines a point having a line of sight with said source point if the angle to said source point is larger than the corresponding angle produced for the previous terrain point; and

d) discarding the information related to the points within a data set of exposable heights which are not in line of sight with the fan source point;

thereby obtaining in each directional fan plurality of data sets of exposable heights, each relating to a specific direction and describing the line of sight information in that direction, in relation to said source point.

~~interrogating said data sets by one or more queries to obtain terrain information for given approach conditions.~~

2. (original) A method according to claim 1, wherein the directional fan azimuth is determined according to the approach azimuth.

3. (original) A method according to claim 1, wherein the fan opening angle is determined according to the visibility limitations angle.

4. (original) A method according to claim 3, further comprising defining a fan angular resolution.

5. (original) A method according to claim 4, wherein the fan angular resolution is determined according to the fan opening angle and the fan maximal range.

6. (original) A method according to claim 1, wherein the fan azimuth is set to the opposite azimuth of the approach azimuth.

7. (cancelled)

8. (previously presented) A method according to claim 1, further comprising compressing the data of the directional fans by applying a data transformation.

9. (currently amended) A method according to claim 1~~7~~, wherein the data of a directional fan is compressed by performing the following steps:

a) defining a tolerable deviation for compression;

b) for each data set of exposable heights defining a line of exposable heights which is drawn between the points, of ~~the~~ a respective angular ~~section~~direction, which are in line of sight with the fan source point, starting with the nearest point and ending with farthest point, in their respective sequence relative to said source point;

c) for each line of exposable heights defining a sleeve of tolerable deviation by adding the tolerable deviation D to the points of said line of exposable heights;

d) for each angular ~~section~~ direction compressing the data of the line of exposable heights by performing the following steps:

d.1) drawing the longest straight line possible within the sleeve of tolerable deviation starting at the edge of said sleeve;

d.2) defining an end point on said longest line within said sleeve at the farthest section where said longest line intersects with one of the boundaries of said sleeve;

dd.3) drawing the next longest line starting from said end point of the previous line; and

dd.4) repeating steps dd.1) to dd.3) until the end said sleeve is reached.

10. (original) A method according to claim 9, wherein data compression of the line of exposable heights is performed starting from the farthest points within the angular section and proceeding toward the source point.

11. (original) A method according to claim 9, wherein data of each directional fan is organized utilizing a polar coordinate system.

12. (original) A method according to claim 1, wherein said DTMO is interrogated to obtain terrain information relating to said one or more directional fans, by indicating given approach conditions.

13. (original) A method according to claim 12, wherein the terrain information is obtained from the directional fan(s) via a lookup process.

14. (original) A method according to claim 12, wherein the terrain information obtained by query interrogation further comprises interpolation within an angular section of the directional fan.

15. (previously presented) A method according to claim 1, wherein the directional fan data set comprises the maximal range, the fan opening angle, the fan direction, the maximal compression deviation, the height of the source point, the spatial location of the source point, and the vectors of exposable heights and their direction.

16. (previously presented) A method according to claim 1, wherein the fan opening angle is set to 360°.

17. (original) A method according to claim 12, wherein interrogation of a directional fan is carried out by extracting from each fan data set lines of exposable heights which are of azimuths which falls within an opening angle directed in the opposite direction of that of the approach azimuth.

18. (previously presented) A method according to claim 12, wherein the interrogation of a directional fan is carried out by one or more queries for detecting the minimal altitudes in which communication and/or line of sight can be established with DTED points.

19. (currently amended) A method according to claim 18, wherein one or more of the following queries are ~~utilized to determine~~used:

aaa) a query providing to the model a distance and approach azimuth with respect to a specific source point, and receives therefrom the minimal altitude required to establish an exposable line of sight to that source point ~~for a given distance and approach azimuth~~;

bbb) a query indicating to the model a source point altitude and an azimuth direction, and inquiring the model what is the minimal ~~altitude~~ distance~~required to establish communication with a given with a given point~~ to establish an exposable line of sight to that source point; and

ccc) a query indicating to the model a source point, and the vehicle location and its altitude, and inquiring the model as to whether the vehicle is exposed to that source point or not~~the minimal distance required to establish line of sight with terrain points for a given altitude and azimuth of approach~~.

20. (original) A method according to claim 18, wherein the interrogation of the directional fan is carried out by one or more queries from the following list:

- Queries of unknown azimuth of approach, utilizing a general azimuth of approach or a range of possible approach azimuths, and using the worst case results;
- Queries with a known azimuth of approach or having a general approach path, but in which the exact state is partially known or unknown; and
- Queries for a specific location for quickly analyzing an exact location.

Claims 21-40 (cancelled)

41. (new) A pre-calculated compact size Digital Terrain Model (DTMO), for inquiring in real time whether one or more source points of interest within a selective area of the terrain is exposed to a ground or air vehicle, which comprises:

a) Definition of one or more selective source points of interest within the terrain;

b) for each selective source point within the terrain, definition of a directional fan, said definition comprises a fan opening angle, a fan azimuth, and a maximal range for terrain analysis;

c) for each of said selective source points, a directional fan data set having origin at the source point, and containing lines of sight information between said source point and plurality of DTED points located within the terrain;

wherein the directional fan(s) comprise one or more data set(s) of exposable heights, each data set comprises:

a) plurality of angular directions that are defined according to a fan angular resolution;

b) a data set of exposable heights for each angular direction, which includes for each point within the angular direction the distance and elevation angle of said point relative to said fan source point;

c) for each point within a data set of exposable heights indication whether said point is in line of sight with the fan source point;

42. (new) A DTMO according to claim 41, wherein the directional fan azimuth is determined according to a planned approach azimuth to said source point.

43. (new) A DTMO according to claim 41, wherein the fan opening angle is determined according to visibility limitations angle.

44. (new) A DTMO according to claim 41, wherein the number of directions in each fan data set depends on the fan angular resolution.

45. (new) A DTMO according to claim 41, wherein the fan azimuth is set to the opposite azimuth of the planned approach azimuth.

46. (new) A DTMO according to claim 41, wherein the data relating to the directional fans is compressed by means of applying a data transformation.

47. (new) A DTMO according to claim 41, wherein the data set of each directional fan is organized utilizing a polar coordinate system.

48. (new) A DTMO according to claim 41, wherein the directional fan data set comprises the maximal range, the fan opening angle, the fan direction, the maximal compression deviation, the height of the source point, the spatial location of the source point, and the vectors of exposable heights and their direction.

49. (new) A DTMO according to claim 41, wherein the fan opening angle is set to 360°.